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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/799,435	03/12/2004	Alexander Tregub	10559-918001	6227

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EXAMINER

ZACHARIA, RAMSEY E

ART UNIT	PAPER NUMBER
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1773

DATE MAILED: 12/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/799,435

Applicant(s)

TREGUB ET AL.

Examiner

Ramsey Zacharia

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 October 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4-6,8-12 and 16-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4-6,8-12 and 16-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 08/08/06; 10/10/06.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application
- ☐ Other: _____.

DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10 October 2006 has been entered.

Claim Objections

3. Claim 12 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 12 requires the process to result in surface deposition of fluorine atoms or fluorine containing groups, while independent claim 11 as now written already recites fluorinating the surface of the fluoropolymer.
4. Claim 20 is objected to because of the following informalities: the term "R3" on line 6 should be --R₃--. Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. Claims 6, 8, 11, 12, 21, 22, and 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Claims 6, 8, and 25 are rendered indefinite because the structure recited in these claims contains variables (i.e. x, y, z, and n) that are not defined by the claim or the specification.

7. Claims 11 and 12 are rendered indefinite because, while the claims refers to the surface and bulk of an amorphous fluoropolymer, a fluoropolymer is a molecule and therefore does not have a surface or a bulk. This rejection may be overcome by replacing the phrase "amorphous fluoropolymer" with the phrase --amorphous fluoropolymer film--.

Moreover, the first occurrence of term "a" on line 4 of claim 11 appears to be a typographical error that should be deleted.

8. The term "largely" in claim 21 is a relative term which renders the claim indefinite. The term "largely" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Use of the term "largely" renders the degree of independence between the composition and surface properties of the surface compared to the bulk of the pellicle film.

9. The phrase "the copolymer perfluorinated to an extent characteristic of the pellicle film having been fluorinated after polymerization to eliminate hydrogen atoms from the polymer backbone in the treated surface" renders claim 22 indefinite because the meaning of this phrase is unclear. It is noted that there are no hydrogen atoms in the backbone of a perfluorinated

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polymer; by definition, a perfluorinated polymer is one in which all the hydrogens have been replaced with fluorine.

Claim Rejections - 35 USC § 102

10. Claims 4, 16, 17, 21, 23, and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Dehennau et al. (US 5,958,524).

Dehennau et al. teach the surface treatment of a plastic material (column 1, lines 10-13). The material may be in the shape of a film (column 2, lines 49-51). The plastic material may be polyvinylidene fluoride, i.e. PVDF (column 3, lines 10-17).

Regarding the "pellicle" limitation, the instant specification broadly defines pellicles as "membranes used during lithography" (see line 1 of paragraph 0002). That is, a pellicle is a membrane that is intended to be used during lithography. It has been held that a recitation with respect to the manner in which a claimed product is intended to be employed does not differentiate the claimed product from a prior art product satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987). Because the article taught by Dehennau et al. may be a film (i.e. a membrane) of PVDF surface treated with fluorine, this article reads on the instant claims directed to a pellicle.

11. Claims 4, 5, 9, 10, and 16-21 rejected under 35 U.S.C. 102(b) as being anticipated by Kusano et al. (US 5,041,304).

Kusano et al. teach a surface treatment method comprising subjecting the surface of an article to plasma treatment with a fluorinated compound, such as hexafluoropropylene (column

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2, lines 22-30). Hexafluoropropylene reads on the species recited in claim 20 where $R_1=R_2=F$ and $R_3=CF_3$. In one embodiment of the examples, a polyethylene terephthalate sheet is used as the article (column 5, lines 53-55).

Regarding the "pellicle" limitation, the instant specification broadly defines pellicles as "membranes used during lithography" (see line 1 of paragraph 0002). That is, a pellicle is a membrane that is intended to be used during lithography. It has been held that a recitation with respect to the manner in which a claimed product is intended to be employed does not differentiate the claimed product from a prior art product satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987). Because the article taught by Kusano et al. may be a sheet (i.e. a membrane) of a polymer surface treated with fluorine, this article reads on the instant claims directed to a pellicle.

Regarding the improvement of properties recited in claims 9 and 10, because the improvement of the property appears to be a function of the increased fluorine content (see paragraph 0018 starting on page 5 of the instant specification), the polymer of Kusano et al. would be expected to also exhibit improved property.

12. Claims 4, 5, 9, 10, and 16-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Sioshansi et al. (US 4,743,493).

Sioshansi et al. teach the implantation of fluorine ions in the surface of a plastic sheet (Figure 2 and column 1, line 51-column 2, line 1). The implanted ions may react with the plastic (column 5, lines 10-20).

Regarding the "pellicle" limitation, the instant specification broadly defines pellicles as "membranes used during lithography" (see line 1 of paragraph 0002). That is, a pellicle is a membrane that is intended to be used during lithography. It has been held that a recitation with respect to the manner in which a claimed product is intended to be employed does not differentiate the claimed product from a prior art product satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987). Because the article taught by Sioshansi et al. may be a sheet (i.e. a membrane) of a polymer surface treated with fluorine, this article reads on the instant claims directed to a pellicle.

Regarding the improvement of properties recited in claims 9 and 10, because the improvement of the property appears to be a function of the increased fluorine content (see paragraph 0018 starting on page 5 of the instant specification), the polymer of Sioshansi et al. would be expected to also exhibit improved property.

Claim Rejections - 35 USC § 102 / 103

13. Claims 6 and 8 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Shirota et al. (US 6,111,062).

Shirota et al. teach a fluorinated polymer that is treated with fluorine to convert unstable hydrogen containing terminal groups to more stable, fluorine containing groups (column 2, lines 25-36). The polymer may be used to form a pellicle film (column 5, lines 35-42). When $j=1$, $h=0$, and $R=F$, the fluorinated polymer of formula (1) in column 3 reads on the structure in claim 6 (where $x=1$, $y=0$, and $z=i$).

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While Shirota et al. do not teach the same fluorination processes recited in claim 6, these are product-by-process limitations. Because the process used by Shirota et al., i.e. dissolving the polymer in a solvent and exposing the solution to fluorine gas, would be expected to not only convert the terminal groups to more stable groups but also fluorinate any hydrogen atoms remaining in the polymer due to the reactive nature of fluorine gas. Therefore, one would expect the polymer resulting from the process of Shirota et al. to be the same as that of the instant invention. As such, the burden is on the applicants to conclusively demonstrate that the claimed product differs from that of Shirota et al.

Regarding the improvement of properties recited in claim 8, because the improvement of the property appears to be a function of the increased fluorine content (see paragraph 0018 starting on page 5 of the instant specification), the polymer of Shirota et al. would be expected to also exhibit improved property.

14. Claims 5, 6, 8-12, and 18-20 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Dehennau et al. (US 5,958,524).

Dehennau et al. teach all the limitations of claims 5, 6, 8-12, and 18-20, as outlined above, except for the specific product-by-process limitations recited in these claims (e.g. ion beam fluorination, plasma fluorination, etc.).

However, Dehennau et al. do teach the surface fluorination of a preformed polymer. Because the determination of patentability of a product-by-process claim is based on the product itself and not the method of production, the burden is on the applicants to conclusively demonstrate that the claimed product differs from that of Dehennau et al.

Regarding the improvement of properties recited in claims 8-10, because the improvement of the properties appears to be a function of the increased fluorine content (see paragraph 0018 starting on page 5 of the instant specification), the polymer of Dehennau et al. would be expected to also exhibit improved properties.

Regarding claim 20, since the recited chemisorbed species encompasses tetrafluoroethylene (i.e. $R_1=R_2=R_3=F$) and since replacing the hydrogens in PVDF with fluorine will result in the same structure as polymerized tetrafluoroethylene, the limitations of this claim appear to be met.

Response to Arguments

15. Applicants' arguments with respect to claims 4, 5, and 9-12 have been considered but are moot in view of the new ground(s) of rejection.

Applicants' arguments with respect to the rejection of claims 6 and 8 over Shirota et al. have been fully considered but they are not persuasive. The applicants argue that Shirota et al. do not describe or suggest PVDF or a material having the structure recited in claim 6.


This is not persuasive because the fluorinated polymer of formula (1) in column 3 of Shirota et al., when $j=1$, $h=0$, and $R=F$, reads on the structure in claim 6 (where $x=1$, $y=0$, and $z=i$).

Conclusion

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramsey Zacharia whose telephone number is (571) 272-1518. The examiner can normally be reached on Monday through Friday from 9 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney, can be reached at (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ramsey Zacharia
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Tech Center 1700